

What is claimed is:

- 1 1. A process for producing a sealant comprising the step of:
 - 2 contacting in a reactor under reaction conditions
 - 3 a polymer comprising at least one vinyl, acrylate, or methacrylate monomer
 - 4 and at least one silane comonomer,
 - 5 at least one polymer capping agent,
 - 6 a catalyst, and
 - 7 a reactive diluent.
 - 8 2. The process of claim 1, wherein the reactive diluent comprises an alkylene
 - 9 carbonate.
 - 1 3. The process of claim 1, wherein the reactive diluent is propylene carbonate.
 - 1 4. The process of claim 1, wherein the silane comonomer of the polymer is selected from the group consisting of methyl trimethoxysilane, methyl triethoxysilane, octyl triethoxysilane, methyl trioximinosilane, vinyl trimethoxysilane, vinyltriethoxysilane, vinyltris (2-methoxyethoxy) silane, 3-[tris (trimethylsiloxy) silyl] propyl methacrylate, vinyl methyldimethoxy silane, vinyl methyldiethoxy silane, vinylphenyldimethoxysilane vinyl oximino silane, and mixtures thereof.
 - 1 5. The process of claim 1, wherein the silane comonomer is a mixture of methyl trimethoxysilane and vinyl trimethoxysilane.
 - 1 6. The process of claim 1, wherein the vinyl, acrylate, or methacrylate monomer
 - 2 is substantially linear.

1 7. The process of claim 1, wherein the acrylate monomer is selected from the
2 group consisting of methyl acrylate, ethyl acrylate, butyl acrylate, 2-ethyl hexyl acrylate, and
3 mixtures thereof.

1 8. The process of claim 1, wherein the methylacrylate monomer is selected from
2 the group consisting of lauryl methacrylate, methyl methacrylate, ethyl methacrylate, butyl
3 methacrylate octyl methacrylate and stearyl methacrylate, and mixtures thereof.

1 9. The process of claim 1, wherein the vinyl monomer is selected from the group
2 consisting of vinyl acetate, acrylonitrile, methacrylonitrile, styrene, dioctyl fumarate, dioctyl
3 maleate and maleic anhydride.

1 10. The process of claim 1, wherein the monomer comprises butylacrylate,
2 methylacrylate, and lauryl methacrylate.

1 11. The process of claim 1, wherein the polymer capping agent is an alkoxy
2 silane.

1 12. The process of claim 1, wherein the polymer capping agent is selected from
2 the group consisting of mercapto – containing alkoxy silanes,
3 g-glycidoxypolytrimethoxysilane and mixtures thereof.

1 13. The process of claim 1, wherein the sealant contains in the range from about
2 90 to about 99 weight percent solid yield.

1 14. The process of claim 1, wherein the sealant contains in the range of from
2 about 95 to about 99 weight percent solid yield.

1 15. The process of claim 1, wherein the sealant contains in the range of at least 98
2 weight percent solid yield.

1 16. The process of claim 1, wherein the sealant contains a glass peel cohesive
2 failure (CF) value in the range of from about 16 to 36 pounds-force per inch of width, and an
3 aluminum peel adhesive failure (AF) value in the range of from about 8.75 to about 28.75
4 pounds-force per inch of width.

1 17. The process of claim 1, wherein the polymer has a molecular weight in the
2 range of from about 50,000 g/mol to about 150,000 g/mol.

1 18. The process of claim 1, wherein the sealant has a viscosity in the range of
2 from about 1000 to about 50,000 Centipose and determined using a 70% solution in toluene
3 at room temperature.

4 19. The process of claim 1, wherein the catalyst is a mixture of t-butyl peroctoate,
5 toluene, and dioctyl tin dilaurate.

1 20. A sealant composition comprising:

2 a polymer comprising at least one vinyl, acrylate or methacrylate monomer and at
3 least one silane comonomer,

4 at least one polymer capping agent,

5 a catalyst, and

6 a reactive diluent.

1 21. The sealant of claim 20, further comprising an additive.

1 22. The sealant of claim 21, wherein the additive comprises fumed silica,
2 g-glycidoxypropyltrimethoxysilane, and a wetting agent.

1 23. The sealant of claim 20, wherein the reactive diluent comprises an alkylene
2 carbonate.

1 24. The sealant of claim 20, wherein the reactive diluent is propylene carbonate.

1 25. The sealant of claim 20, wherein the silane comonomer of the polymer is
2 selected from the group consisting of methyl trimethoxysilane, methyl triethoxysilane, octyl
3 triethoxysilane, methyl trioximinosilane, vinyl trimethoxysilane, vinyltriethoxysilane,
4 vinyltris (2-methoxyethoxy) silane, 3-[tris (trimethylsiloxy) silyl] propyl methacrylate, vinyl
5 methyldimethoxy silane, vinyl methyldiethoxy silane, vinylphenyldimethoxysilane vinyl
6 oximino silane, and mixtures thereof.

1 26. The sealant of claim 20, wherein the silane comonomer is a mixture of
2 methyltrimethoxysilane and vinyl trimethoxysilane.

1 27. The sealant of claim 20, wherein the vinyl, acrylate, or methacrylate monomer
2 is substantially linear.

1 28. The sealant of claim 20, wherein the acrylate monomer is selected from the
2 group consisting of methyl acrylate, ethyl acrylate, butyl acrylate, 2-ethyl hexyl acrylate, and
3 mixtures thereof.

1 29. The sealant of claim 20, wherein the methylacrylate monomer is selected from
2 the group consisting of, lauryl methacrylate, methyl methacrylate, ethyl methacrylate, butyl
3 methacrylate octyl methacrylate and stearyl methacrylate, and mixtures thereof.

1 30. The sealant of claim 20, wherein the vinyl monomer is selected from the
2 group consisting of vinyl acetate, acrylonitrile, methacrylonitrile, styrene, dioctyl fumarate,
3 dioctyl maleate and maleic anhydride.

1 31. The sealant of claim 20, wherein the monomer comprises butylacrylate,
2 methylacrylate, and lauryl methacrylate.

1 32. The sealant of claim 20, wherein the polymer capping agent is an alkoxy
2 silane.

1 33. The sealant of claim 20, wherein the polymer capping agent is selected from
2 the group consisting of mercapto – containing alkoxy silanes, g-glycidoxypolytrimethoxy
3 silane, and mixtures thereof.

1 34. The sealant of claim 20, wherein the sealant contains in the range of from
2 about 90 to about 99 weight percent solid yield.

1 35. The sealant of claim 20, wherein the sealant contains in the range of from
2 about 95 to about 99 weight percent solid yield.

1 36. The sealant of claim 20, wherein the sealant contains in the range of at least
2 98 weight percent solid yield.

1 37. The sealant of claim 20, wherein the sealant has a glass peel cohesive failure
2 (CF) value in the range of from about 16 to 36 pounds-force per inch of width, and an
3 aluminum peel adhesive failure (AF) value in the range of from about 8.75 to about 28.75
4 pounds-force per inch of width.

1 38. The sealant of claim 20, wherein the polymer contains a molecular weight in
2 the range of from about 50,000 g/mol to about 150,000 g/mol.

1 39. The sealant of claim 20, wherein the sealant contains a viscosity in the range
2 of from about 1000 to about 50,000 Centipose and determined using a 70% solution in
3 toluene at room temperature.

1 40. The sealant of claim 20, wherein the catalyst is a free radical genemtor
2 selected from the group consisting of azo, peroxide, and hydroperoxide catalysts, and
3 mixtures thereof.

1 41. The sealant of claim 20, wherein the catalyst is a mixture of t-butyl
2 peroctoate, toluene, and dioctyl tin dilaurate.